

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. An isolated polypeptide having the sequence of DSP-5 recited in SEQ ID NO:3, or a variant thereof that differs in one or more amino acid deletions, additions, insertions or substitutions at no more than 50% of the residues in SEQ ID NO:3, such that the polypeptide retains the ability to dephosphorylate an activated MAP-kinase.
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Canceled)
9. (Canceled)
10. (Canceled)
11. (Canceled)
12. (Canceled)
13. (Canceled)
14. (Canceled)
15. An isolated antibody, or antigen binding fragment thereof, that specifically binds to a DSP-5 polypeptide having the sequence of SEQ ID NO:3.

16. An antibody or fragment thereof according to claim 15, wherein the antibody is a monoclonal antibody.
17. A pharmaceutical composition comprising an antibody or fragment thereof according to claim 15 in combination with a physiologically acceptable carrier.
18. A method for detecting DSP-5 expression in a sample, comprising:
 - (a) contacting a sample with an antibody or an antigen-binding fragment thereof according to claim 15, under conditions and for a time sufficient to allow formation of an antibody/DSP-5 complex; and
 - (b) detecting the level of antibody/DSP-5 complex, and therefrom detecting the presence of DSP-5 in a sample.
19. A method according to claim 18, wherein the antibody is linked to a support material.
20. A method according to claim 18, wherein the antibody is linked to a detectable marker.
21. A method according to claim 18, wherein the sample is a biological sample obtained from a patient.
22. (Canceled)
23. (Canceled)
24. (Canceled)
25. (Canceled)
26. A method for screening for an agent that modulates DSP-5 activity, comprising the steps of:
 - (a) contacting a candidate agent with a polypeptide according to claim 1, under conditions and for a time sufficient to permit interaction between the polypeptide and candidate agent; and
 - (b) subsequently evaluating the ability of the polypeptide to dephosphorylate a DSP-5 substrate, relative to a predetermined ability of the polypeptide to dephosphorylate the DSP-5 substrate in the absence of candidate agent;and therefrom identifying an agent that modulates DSP-5 activity.
27. A method according to claim 26, wherein the DSP-5 substrate is a MAP-kinase.
28. A method according to claim 26, wherein the candidate agent is a small molecule.
29. A method according to claim 26, wherein the small molecule is present within a combinatorial library.

30. A method for screening for an agent that modulates DSP-5 activity, comprising the steps of:
- (a) contacting a candidate agent with a cell comprising a DSP-5 promoter operably linked to a polynucleotide encoding a detectable transcript or protein, under conditions and for a time sufficient to permit interaction between the promoter and candidate agent; and
 - (b) subsequently evaluating the expression of the polynucleotide, relative to a predetermined level of expression in the absence of candidate agent;
- and therefrom identifying an agent that modulates DSP-5 activity.
31. A method according to claim 30, wherein the polynucleotide encodes a DSP-5 polypeptide.
32. A method according to claim 30, wherein the polynucleotide encodes a reporter protein.
33. A method for modulating a proliferative response in a cell, comprising contacting a cell with an agent that modulates DSP-5 activity.
34. A method for modulating differentiation of a cell, comprising contacting a cell with an agent that modulates DSP-5 activity.
35. A method for modulating survival of a cell, comprising contacting a cell with an agent that modulates DSP-5 activity.
36. A method according to any one of claims 33-35, wherein the agent modulates a pattern of gene expression.
37. A method according to any one of claims 33-35, wherein the cell displays contact inhibition of cell growth.
38. A method according to any one of claims 33-35, wherein the cell displays anchorage independent growth.
39. A method according to any one of claims 33-35, wherein the cell displays an altered intercellular adhesion property.
40. A method according to claim 35, wherein the agent modulates apoptosis.
41. A method according to claim 35, wherein the agent modulates the cell cycle.
42. A method according to claim 32, wherein the cell is present within a patient.
43. A method for treating a patient afflicted with a disorder associated with DSP-5 activity, comprising administering to a patient a therapeutically effective amount of an agent that modulates DSP-5 activity.

44. A method according to claim 43, wherein the disorder is selected from the group consisting of cancer, graft-versus-host disease, autoimmune diseases, allergies, metabolic diseases, abnormal cell growth, abnormal cell proliferation and cell cycle abnormalities.
45. A DSP-5 substrate trapping mutant polypeptide that differs from the sequence recited in SEQ ID NO:3 in one or more amino acid deletions, additions, insertions or substitutions at no more than 50% of the residues in SEQ ID NO:3, such that the polypeptide binds to a substrate with an affinity that is not substantially diminished relative to DSP-5, and such that the ability of the polypeptide to dephosphorylate a substrate is reduced relative to DSP-5.
46. A substrate trapping mutant polypeptide according to claim 45, wherein the polypeptide contains a substitution at position 84 or position 115 of SEQ ID NO:3.
47. A method for screening a molecule for the ability to interact with DSP-5, comprising the steps of:
- (a) contacting a candidate molecule with a polypeptide according to claim 1 under conditions and for a time sufficient to permit the candidate molecule and polypeptide to interact; and
 - (b) detecting the presence or absence of binding of the candidate molecule to the polypeptide, and therefrom determining whether the candidate molecule interacts with DSP-5.
48. A method according to claim 47, wherein the step of detecting comprises an affinity purification step.
49. A method according to claim 47, wherein the step of detecting comprises a yeast two hybrid screen or a screen of a phage display library.
50. An isolated polypeptide having the sequence of DSP-5 alternate form recited in SEQ ID NO:4, or a variant thereof that differs in one or more amino acid deletions, additions, insertions or substitutions at no more than 50% of the residues in SEQ ID NO:4, such that the polypeptide retains the ability to dephosphorylate an activated MAP-kinase.
51. An isolated polynucleotide that encodes at least ten consecutive amino acids of a polypeptide having a sequence corresponding to SEQ ID NO:4.
52. An isolated polynucleotide that encodes at least fifteen consecutive amino acids of a polypeptide having a sequence corresponding to SEQ ID NO:4.
53. An expression vector comprising a polynucleotide according to claim 51 or 52.
54. A host cell transformed or transfected with an expression vector according to claim 53.
55. An isolated polynucleotide that encodes a polypeptide according to claim 50.

56. A polynucleotide according to claim 55, comprising the sequence recited in SEQ ID NO:2.
57. An expression vector comprising a polynucleotide according to claim 55.
58. A host cell transformed or transfected with an expression vector according to claim 57.
59. An antisense polynucleotide comprising at least 15 consecutive nucleotides complementary to a polynucleotide according to claim 55.
60. An isolated polynucleotide that detectably hybridizes to the complement of the sequence recited in SEQ ID NO:2 under conditions that include a wash in 0.1X SSC and 0.1% SDS at 60 °C for 15 minutes.
61. An expression vector comprising a polynucleotide according to claim 59 or claim 60.
62. A host cell transformed or transfected with an expression vector according to claim 61.
63. A method of producing a DSP-5 alternate form polypeptide, comprising the steps of:
(a) culturing a host cell according to claim 58 under conditions that permit expression of the DSP-5 alternate form polypeptide; and
(b) isolating DSP-5 alternate form polypeptide from the host cell culture.
64. An isolated antibody, or antigen binding fragment thereof, that specifically binds to a DSP-5 alternate form polypeptide having the sequence of SEQ ID NO:4.
65. An antibody or fragment thereof according to claim 64, wherein the antibody is a monoclonal antibody.
66. A pharmaceutical composition comprising an antibody or fragment thereof according to claim 64 in combination with a physiologically acceptable carrier.
67. A method for detecting DSP-5 alternate form expression in a sample, comprising:
(a) contacting a sample with an antibody or an antigen-binding fragment thereof according to claim 64, under conditions and for a time sufficient to allow formation of an antibody/DSP-5 alternate form complex; and
(b) detecting the level of antibody/DSP-5 alternate form complex, and therefrom detecting the presence of DSP-5 alternate form in a sample.
68. A method according to claim 67, wherein the antibody is linked to a support material.
69. A method according to claim 67, wherein the antibody is linked to a detectable marker.

70. A method according to claim 67, wherein the sample is a biological sample obtained from a patient.
71. A method for detecting DSP-5 alternate form expression in a sample, comprising:
- (a) contacting a sample with an antisense polynucleotide according to claim 59 or claim 60; and
 - (b) detecting in the sample an amount of DSP-5 alternate form polynucleotide that hybridizes to the antisense polynucleotide, and therefrom detecting DSP-5 alternate form expression in the sample.
72. A method according to claim 71, wherein the amount of DSP-5 alternate form polynucleotide that hybridizes to the antisense polynucleotide is determined using polymerase chain reaction.
73. A method according to claim 71, wherein the amount of DSP-5 alternate form polynucleotide that hybridizes to the antisense polynucleotide is determined using a hybridization assay.
74. A method according to claim 71, wherein the sample comprises an RNA or cDNA preparation.
75. A method for screening for an agent that modulates DSP-5 alternate form activity, comprising the steps of:
- (a) contacting a candidate agent with a polypeptide according to claim 50, under conditions and for a time sufficient to permit interaction between the polypeptide and candidate agent; and
 - (b) subsequently evaluating the ability of the polypeptide to dephosphorylate a DSP-5 alternate form substrate, relative to a predetermined ability of the polypeptide to dephosphorylate the DSP-5 alternate form substrate in the absence of candidate agent; and therefrom identifying an agent that modulates DSP-5 alternate form activity.
76. A method according to claim 75, wherein the DSP-5 alternate form substrate is a MAP-kinase.
77. A method according to claim 75, wherein the candidate agent is a small molecule.
78. A method according to claim 75, wherein the small molecule is present within a combinatorial library.
79. A method for screening for an agent that modulates DSP-5 alternate form activity, comprising the steps of:
- (a) contacting a candidate agent with a cell comprising a DSP-5 alternate form promoter operably linked to a polynucleotide encoding a detectable transcript or protein, under conditions and for a time sufficient to permit interaction between the promoter and candidate agent; and

(b) subsequently evaluating the expression of the polynucleotide, relative to a predetermined level of expression in the absence of candidate agent;
and therefrom identifying an agent that modulates DSP-5 alternate form activity.

80. A method according to claim 79, wherein the polynucleotide encodes a DSP-5 alternate form polypeptide.

81. A method according to claim 79, wherein the polynucleotide encodes a reporter protein.

82. A method for modulating a proliferative response in a cell, comprising contacting a cell with an agent that modulates DSP-5 alternate form activity.

83. A method for modulating differentiation of a cell, comprising contacting a cell with an agent that modulates DSP-5 alternate form activity.

84. A method for modulating survival of a cell, comprising contacting a cell with an agent that modulates DSP-5 alternate form activity.

85. A method according to any one of claims 82-84, wherein the agent modulates a pattern of gene expression.

86. A method according to any one of claims 82-84, wherein the cell displays contact inhibition of cell growth.

87. A method according to any one of claims 82-84, wherein the cell displays anchorage independent growth.

88. A method according to any one of claims 82-84, wherein the cell displays an altered intercellular adhesion property.

89. A method according to claim 84, wherein the agent modulates apoptosis.

90. A method according to claim 84, wherein the agent modulates the cell cycle.

91. A method according to claim 81, wherein the cell is present within a patient.

92. A method for treating a patient afflicted with a disorder associated with DSP-5 alternate form activity, comprising administering to a patient a therapeutically effective amount of an agent that modulates DSP-5 alternate form activity.

93. A method according to claim 92, wherein the disorder is selected from the group consisting of cancer, graft-versus-host disease, autoimmune diseases, allergies, metabolic diseases, abnormal cell growth, abnormal cell proliferation and cell cycle abnormalities.

94. A DSP-5 alternate form substrate trapping mutant polypeptide that differs from the sequence recited in SEQ ID NO:4 in one or more amino acid deletions, additions, insertions or substitutions at no more than 50% of the residues in SEQ ID NO:4, such that the polypeptide binds to a substrate with an affinity that is not substantially diminished relative to DSP-5 alternate form, and such that the ability of the polypeptide to dephosphorylate a substrate is reduced relative to DSP-5 alternate form.

95. A substrate trapping mutant polypeptide according to claim 94, wherein the polypeptide contains a substitution at position 84 or position 115 of SEQ ID NO:4.

96. A method for screening a molecule for the ability to interact with DSP-5 alternate form, comprising the steps of:

(a) contacting a candidate molecule with a polypeptide according to claim 50 under conditions and for a time sufficient to permit the candidate molecule and polypeptide to interact; and

(b) detecting the presence or absence of binding of the candidate molecule to the polypeptide, and therefrom determining whether the candidate molecule interacts with DSP-5 alternate form.

97. A method according to claim 96, wherein the step of detecting comprises an affinity purification step.

98. A method according to claim 96, wherein the step of detecting comprises a yeast two hybrid screen or a screen of a phage display library.